

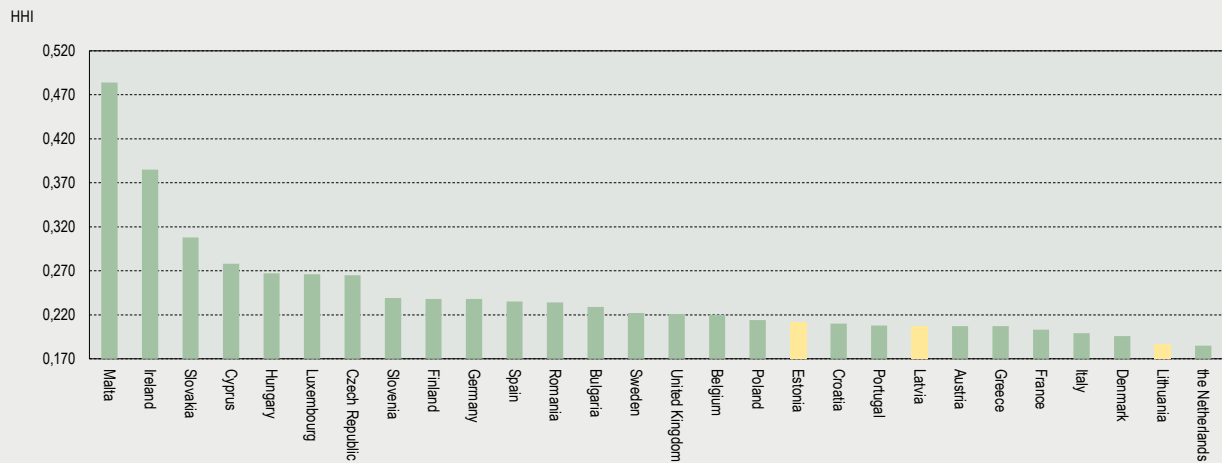
Box 1. Lithuanian export concentration

In 2012, exports again became the main driver of economic growth. For export growth to be sustainable, it is important that the export growth withstand a variety of demand and supply shocks. One of the ways to reduce their impact is to diversify exported products by products or markets. Various concentration indices are calculated to assess the level of export diversification, one of the most popular being the Herfindahl-Hirschman Index (HHI)¹:

$$HHI = \frac{\sum_{i=1}^n \frac{X_{it}^2}{X_t}}{n}$$

here: X_{it} — product i exports (or exports to the country i), n — number of product groups (or countries), X_t — total exports. The index value can range from 0 to 1. However, the lowest HHI value varies depending on the number of product groups or countries used in the calculation — the higher it is, the smaller the potential lowest value of the index. HHI would be the smallest when the share of export of all product groups or countries is the same. When the entire export consists of only one group of products, or products are exported to only one trading partner, the index acquires its highest value. To avoid extremely large fluctuations of the index, further analysis is made based on the export data excluding the export of mineral fuels, lubricants and related materials, since the latter is highly dependent on price fluctuations. These products are classified as category 3 in the Standard International Trade Classification (SITC).

Chart A. Values of HHI of the exports to EU countries and Croatia in 2011 (estimated by breaking down the exports into the groups of products)



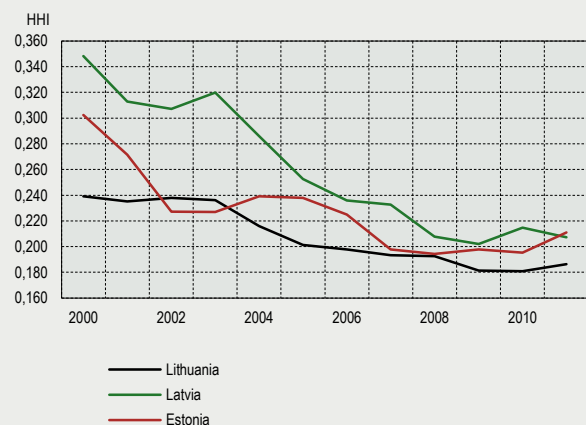
Sources: Comtrade (UN) and Bank of Lithuania calculations.

In assessing the export concentration by commodities, the two-digit level of SITC Revision 3 classification is used. In 2011, the Lithuanian export HHI value was 0.186 (see Chart A). It is the lowest HHI value among the Baltic states (in Latvia, the value is 0.207, in Estonia – 0.211), and one of the lowest in the EU (Croatia is included in the calculations, as this country will soon become a member of the EU). Latvia and Estonia are also among the 10 countries with the highest export diversification in the EU. Large export diversification by product means that the economy of Lithuania (and other Baltic states) should be relatively less affected by the shocks in demand for the most important export products than most other EU economies.

Lithuanian export diversification by products grew throughout the whole period of 2000–2011 (see Chart B). A similar trend prevailed in Estonia and Latvia. Compared to the other Baltic states, in Lithuania export concentration was decreasing significantly slower. Such changes in export concentration are explained by significantly lower concentration of Lithuanian exports at the beginning of the analysed period.

Calculations of the concentration index can also estimate the reasons for export growth in the product groups that contributed most to the expansion of total exports. If export diversification of a certain group of products increases, this suggests that export of less important products in that group (making up a smaller share in the total exports of the group) in the analysed period grew faster than export of its more important products, i.e. the structure of exports in the certain product group becomes more gradual. When the trend is the opposite — more important product exports grow faster than less important product exports — export diversification of the certain product groups decreases, i.e. increasing specialization in export of more important products. The analysis is carried out

Chart B. HHI changes in 2000–2011 (estimated by breaking down the export into the groups of products)



Sources: Comtrade (UN) and Bank of Lithuania calculations.

by analysing the effect of changes of export concentration in individual product groups, using more detailed exports data.

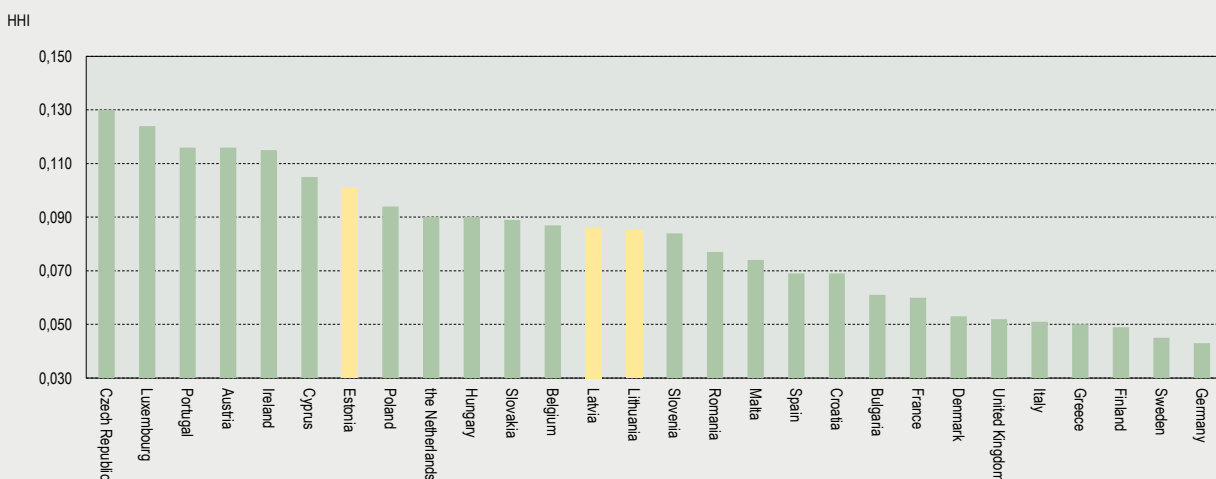
Analysis of the HHI development of the main exported product groups shows that exports of product groups contributing the most to Lithuanian export expansion — food, beverages and tobacco group, chemical, rubber, plastics and non-metallic mineral product group — grew due to the relatively robust growth of export of less important products, i.e. the export concentration of these groups decreased. Concentration in the food, beverages and tobacco product group decreased in 1999–2006, and later remained essentially unchanged. For the export of chemical, rubber, plastics and non-metallic mineral products, the year 2006 was essential. At that time, larger factories of primary plastics were launched in Lithuania, which reduced the export concentration in that product group. The development of export of other less important product groups — vehicle groups and wood and wood products, including furniture, paper and cardboard — was led by the faster growth of the key product exports: in the group of vehicles — cars and other motor vehicles, and in the group of wood and wood products, including furniture, paper and cardboard — furniture. Textile products were probably the only one of the most important export product groups, which reached higher diversification by products due to the declining traditional textile industry. At the end of the analysed period, the share of textile products in total exports was 3 times lower than at the beginning and niche products accounted for an important part of textile exports. Export concentration of other groups of products over the analysed period did not change much, which indicates that the structure of products comprising these product groups did not change significantly.

During the analysed period, basically in all product groups that determined the development of Latvia's exports — metals and metal products, chemical products, non-food raw materials — the exports of less important products was growing faster compared to the more important product exports, i.e. export diversification in these product groups increased. Only the diversification of exported products from the agricultural and industrial machinery and equipment group declined, while concentration changes in the food, beverages and tobacco group were minor.

Somewhat less than one-third of the total exports in Estonia are agricultural and industrial machinery and equipment. At the beginning of the analysed period exports of this group of products were highly concentrated, the main product — telecommunication equipment — accounted for three-quarters of this group's exports. However, Estonia started to export more construction engineering equipment, electrical equipment and other similar equipment, decreasing the share of telecommunication equipment to 40 per cent at the end of the period, thus agricultural and industrial machinery and equipment export diversification increased. Export diversification of other major product groups — food, beverages and tobacco, non-food raw materials — also increased over the period in question.

The analysis of export concentration by geographical markets shows that the concentration of Lithuanian exports among the EU member states is average (see Chart C). However, in terms of the Baltic States, it is the smallest (in 2011 the Lithuanian HHI was 0.085, Latvian — 0.086, Estonian — 0.101). Therefore, if compared to other EU countries, the demand shock associated with the major trading partners might have a relatively greater impact than the demand shock associated with the main exported products groups. Thus, in terms of the geographical markets Lithuanian exports are not distributed as well as by products. Significant market concentration of Lithuanian exports is in part associated with very high export to Russia. At the end of the analysed period, one-fifth of the exported products were delivered to that country. Therefore, in the event of demand shock in Russia, Lithuania's economy might be affected rather heavily.

Chart C. Value of HHI of the exports of EU countries and Croatia in 2011 (estimated by breaking down the export into countries)



Sources: Comtrade (UN) and Bank of Lithuania calculations.

In the context of the current sovereign debt crisis in the EU, it was decided to evaluate the concentration of Lithuanian exports only to EU member states. Assessing it gave much better results than evaluating the concentration of Lithuanian exports to all global markets. In 2011, among the EU member states, the index of the Lithuanian export concentration to the EU is one of the lowest, only the corresponding indicators of Germany and Sweden being less. This suggests that in Lithuania exports to EU member states is divided relatively better than in other EU countries and in the event of demand shock in one of the major trading partners, the Lithuania's foreign trade would suffer less. The situation is somewhat different in other Baltic countries. The diversification of Latvia's exports to EU countries is higher than the exports to the world markets, and the diversification of Estonia's exports to EU countries is similar to the diversification of its exports to the world markets.

Unlike export concentration by product, concentration of Lithuanian exports to the rest of the world in the analysed period rose (see Chart D). Although initially the latter declined, however, since 2004 it began to grow, with a brief pause only in 2009. Among the Baltic countries, export concentration by markets was increasing only in Lithuania. In Latvia in the analysed period it remained broadly unchanged. In Estonia significant export concentration by markets was in 2000–2002, after which it fluctuated around a certain long-term average. In assessment of changes of concentration of export only to EU countries, no major changes have been observed over the entire analysed period.

In summarizing the results, it can be concluded that the Lithuanian export structure is well diversified. Increasing diversification by products resulted in the development of export of the product groups, which contributed the most to expansion of total exports. However, export of some of the less important groups of products grew due to increasing specialization. Furthermore, there are some concerns about the weakening export diversification by markets and increasing export dependence on the economic situation in Russia. Diversification of exports in other Baltic countries is much lower than the Lithuanian exports, but higher than the EU average.

Chart D. HHI changes in 2000–2011 (estimated by breaking down the export into countries)



Sources: Comtrade (UN) and Bank of Lithuania calculations.

¹ In order to highlight the difference between the countries, modified HHI is used. Classical formula for the index is $HHI = \frac{n}{i=1} \frac{X_{it}}{X_t}^2$.